

Observatory	Telescope	Camera	Resolution / FOV	Notes / Software
Leura	0.35m f/6.5 SCT	ST9XE	1.80 (15.4 x 15.4)	300s, MPO Canopus
Kingsgrove	0.25m f/5.2 SCT	ST402ME	1.40 (17.9 x 11.9)	300s, MPO Canopus
Sonoita	0.35m f/11 SCT	STL-1001E	1.25 (22.0 x 22.0)	MPO Canopus
Lick	1.0m f/17 Cassegrain	Direct Imaging	0.37 (12.6 x 12.6)	CCD-2, bin 2x2
GMARS	0.35m f/11 SCT	STL 1001E	1.23 (23.0 x 23.0)	Bin 1x1, MPO Canopus
Modra	0.60m f/5.5 reflector	AP8p	1.50 (25.0 x 25.0)	IRAF+custom software
Via Capote	0.35m f/10 Cassegrain	Alta U6	1.43 (24.4 x 24.4)	MPO Canopus
Bagnall Beach	0.28m f/11.5 SCT	ST9E	1.29 (11.0 x 11.0)	MPO Canopus

Table 2. Instrument specifications. Resolution is image scale in arcsecond pixel⁻¹; FOV is the field of view in arcminutes. The Notes column gives information such as exposure times, reduction software used, and other equipment details.

Asteroids 3, 24, 60, 261, and 863.” *Icarus* **77**, 171-186.

Pravec, P., Scheirich, P., Kušnirák, P., Šarounová, L., Mottola, S., Hahn, G., Brown, P., Esquerdo, G., Kaiser, N., Krzeminski, Z., Pray, D.P., Warner, B.D., Harris, A.W., Nolan, M.C., Howell, E.S., Benner, L.A.M., Margot, J.-L., Galád, A., Holliday, W., Hicks, Krugly, Yu. N., Tholen, D., Whiteley, R., Marchis, F., DeGraff, D.R., Grauer, A., Larson, S., Velichko, F.P., Cooney Jr., W.R., Stephens, R., Zhu, J., Kirsch, K., Dyvig, R., Snyder, L., Reddy, V., Moorex, S., Gajdoš, Š., Világi, J., Masi, G., Higgins, D., Funkhouser, G., Knight, B., Slivan, S., Behrend, R., Grenon, M., Burki, G., Roy, R., Demeutis, C., Matter, D., Waelchli, N., Revaz, Y., Klotz, A., Rieugné, M., Thierry, P., Cotrez, V., Brunetto, L., and Kober, G. (2006). “Photometric survey of binary Near-Earth Asteroids.” *Icarus* **181**, 63-93.

Pravec, P. (2008). “Photometric Survey of Asynchronous Binary Asteroids.” <http://www.asu.cas.cz/~asteroid/binastphotosurvey.htm>.

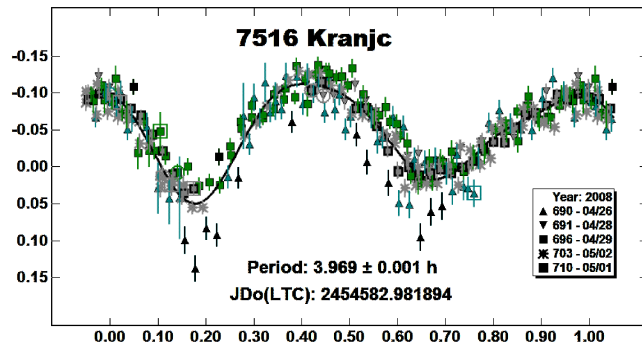


Figure 1. Lightcurve of 7516 Kranjc showing the attenuation.

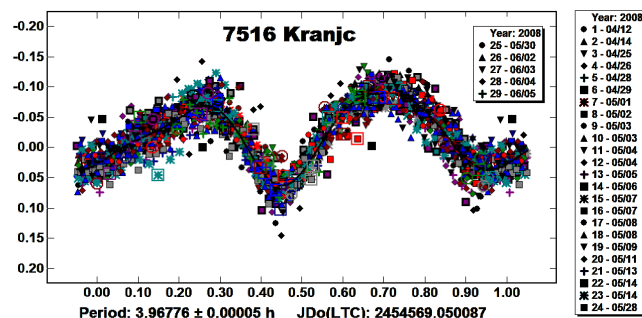


Figure 2. Composite lightcurve of 7516 Kranjc.

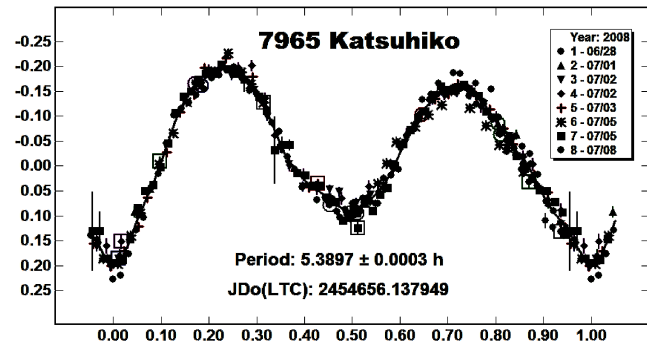


Figure 3. Composite lightcurve of 7965 Katsuhiko.

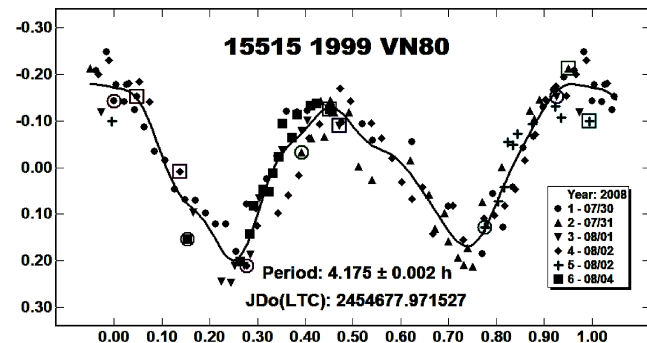


Figure 4. Composite lightcurve of (15515) 1999 VN80.

LIGHTCURVES FOR 155 SCYLLA AND 2358 BAHNER

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Lightcurve observations have yielded period determinations for the followings asteroids: 155 Scylla, 7.960 ± 0.001 h; and 2358 Bahner, 10.855 ± 0.001 h.

Photometric data were collected using a 36-cm Meade Schmidt-Cassegrain telescope operating at f/6.06 with a focal reducer and Apogee U9 camera at Barnes Ridge Observatory located in northern California. The camera was binned 1x1 with a resulting image scale of 0.86 arc-seconds per pixel. The images for Scylla were taken through a clear filter while those for Bahner were taken through a Johnson-Cousins V filter. All image exposures were 120 seconds at -25C. All photometric data were obtained with *MaxIm*

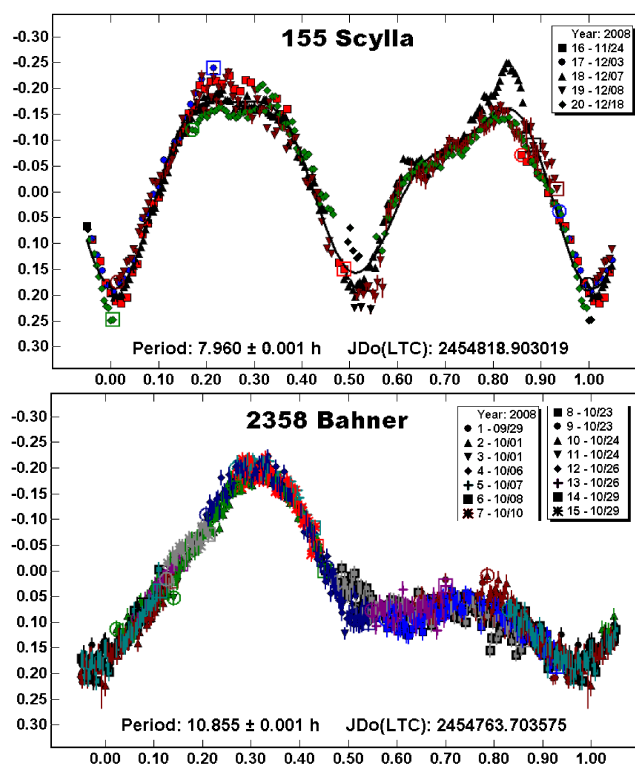
DL v5 (Diffraction Limited Software) driven by *ACP* v5 (DC3 Dreams Software) and analyzed using *MPO Canopus* v9.5 (Bdw Publishing). All comparison stars and asteroid targets had at least 100 SNR.

155 Scylla. Data were collected from 2008 November 24 through December 18 resulting in 5 data sets and 421 data points. A period of 7.960 ± 0.001 h was determined. A previous lightcurve with a period of 7.9580 ± 0.00200 h and 0.20 mag amplitude has been reported by Addleman et al. (2005).

2358 Bahner. Data were collected from 2008 September 29 through October 29 resulting in 15 data sets and 960 data points. A period of 10.855 ± 0.001 h was determined. No previous published lightcurve data have been found.

References

Addleman, D., Covele, B., Duncan, A., Johnson, J., Kramb, S., Lechrone, C., Reichert, C., Starnes, H., Twarek, A., Kirkpatrick, E., and Ditteon, R. (2005). "Rose-Hullman Spring 2005 Lightcurve Results: 155 Scylla, 590 Tomyris, 1655 Comas Sola, 2058 Roka, 6379 Vrbs, and (25934) 2001 DC74." *Minor Planet Bulletin* **32-4**, 76-78.



PERIOD DETERMINATIONS FOR 31 EUPHROSINE, 35 LEUKOTHEA, 56 MELETE, 137 MELIBOEAE, 155 SCYLLA, AND 264 LIBUSSA

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Synodic rotation periods and amplitudes are reported for the following asteroids: 31 Euphrosyne 5.530 ± 0.002 h, 0.08 ± 0.01 mag; 35 Leukothea 31.962 ± 0.05 h, 0.08 ± 0.02 mag with one maximum and minimum per cycle; 56 Melete 18.147 ± 0.001 h, 0.10 ± 0.01 mag with four unequal maxima and minima per cycle; 137 Meliboea 25.676 ± 0.001 h, 0.16 ± 0.02 mag; 155 Scylla 7.9597 ± 0.0001 h, 0.46 ± 0.03 mag; 264 Libussa 9.2276 ± 0.0002 h, 0.33 ± 0.03 mag.

Observations of six asteroids were all obtained at the Organ Mesa Observatory using a 35.4-cm Meade LX 200 GPS S-C and SBIG STL-1001E CCD. Exposures were 60 seconds and unguided through a clear filter. Image measurement using differential photometry and lightcurve analysis were done with *MPO Canopus*. Due to the large number of data points acquired for each target in this study, the lightcurves have been binned in sets of three data points with a maximum of five minutes between points.

31 Euphrosyne. Harris et al. (2008) state a period of 5.531 h. New observations on four nights, 2008 Apr. 6–25, show a period of 5.530 ± 0.002 h, amplitude 0.08 ± 0.01 mag.

35 Leukothea. Lagerkvist et al. (1987) show no variation beyond 0.02 mag. Weidenschilling et al. (1990) found a lightcurve with amplitude of 0.38 mag. A maximum and a minimum separated by about 24 hours suggested a period near 32.0 hours and ruled out a period near 64 hours. Pilcher (2008) found a monomodal lightcurve of period 31.893 ± 0.004 h, amplitude 0.07 ± 0.02 mag. Bernasconi, as presented by Behrend (2008), obtained lightcurves with an amplitude 0.38 ± 0.03 mag. They did not obtain an independent period determination but did show that their data are consistent with the 31.893 h period by Pilcher (2008). New lightcurves obtained on 11 nights from 2008 Sept. 23–Nov. 20 show a period of 31.962 h, amplitude 0.08 mag with one maximum and minimum per cycle. This period is secure in the sense that no viable alias period is consistent with the observations.

However three factors conspire to make the actual errors larger than the formal errors. These are 1) the 3:4 commensurability with the Earth's rotation period, 2) the small amplitude, and 3) systematic magnitude shifts of asteroid versus comparison stars caused by differential extinction encountered in all-night runs since the comparisons were selected without regard to color index. As a result, instead of the formal errors of 0.003 h and 0.01 mag, a conservative estimate suggests errors of 0.05 h and 0.02 mag are more appropriate.

The combination of small amplitude lightcurves in 2007 (longitude ~352 deg) and again in 2008 (longitude ~42 deg) with a large amplitude lightcurve in 1988 (longitude ~87 deg) indicates that one rotational pole is nearly half-way between 352 and 42 deg, probably within a few degrees of the ecliptic and longitude 17